

SEMICONDUCTOR DEVICE INCLUDING
BAND-ENGINEERED SUPERLATTICE

Abstract of the Disclosure

A semiconductor device includes a superlattice that, in turn, includes a plurality of stacked groups of layers. The device may also include regions for causing transport of charge carriers through the superlattice in a parallel direction relative to the stacked groups of layers. Each group of the superlattice may include a plurality of stacked base semiconductor monolayers defining a base semiconductor portion and an energy band-modifying layer thereon. Moreover, the energy-band modifying layer may include at least one non-semiconductor monolayer constrained within a crystal lattice of adjacent base semiconductor portions. Accordingly, the superlattice may have a higher charge carrier mobility in the parallel direction than would otherwise be present.